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RESEARCH AID

RUBLE-DOLLAR RATIOS
FOR PRICES
OF MACHINE TOOLS

METALFORMING MACHINERY,
TEXTILE MACHINERY, AND ABRASIVE PRODUCTS



CIA/RR RA-9

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CENTRAL INTELLIGENCE AGENCY

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(ORR Project 34.1611)

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FOREWORD

This research aid has two objectives. First, it is intended as an aid to analysts who may have occasion to convert the Soviet prices of machine tools, metalforming machinery, textile machinery, or abrasive products prevailing in 1950 from rubles into US dollars. Second, the research aid calls attention to the problems involved in arriving at truly representative ruble-dollar ratios and emphasizes the fact that such ratios can vary considerably over a relatively short period of time. The price ratios presented here undoubtedly provide a more accurate rate of exchange for the given classes of machinery than does the officially fixed exchange rate of 4 rubles to 1 US dollar.

It is believed that this research aid may also provide a basis for establishing similar ratios for other years so that the applications and limitations of ruble-dollar ratios may be more fully appreciated.

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RUBLE-DOLLAR RATIOS
FOR PRICES OF MACHINE TOOLS, METALFORMING MACHINERY,
TEXTILE MACHINERY, AND ABRASIVE PRODUCTS*

Summary

This study of ruble-dollar ratios, based on the prices of selected types of machinery and abrasive products produced by the machine building industries of the USSR and the US, seeks to establish representative ruble-dollar ratios prevailing for individual commodities and classes of commodities in 1950.

The ruble-dollar ratios shown in Table 1, below, are arithmetic averages derived from ratios for the prices of all the individual commodities included in this study.

Table 1

Ruble-Dollar Ratios
for Prices of Machine Tools, Metalforming Machinery,
Textile Machinery, and Abrasive Products
in 1950

Class	Ruble-Dollar Ratio	
	Unweighted Average	Weighted Average ^{a/}
Machine tools	4.41:1	4.50:1
Metalforming machinery	7.45:1	6.82:1
Textile machinery	8.35:1	7.84:1
Abrasive products	b/	2.52:1

a. Weighted averages for machine tools, metalforming machinery, and textile machinery are based on the value of US production in 1947; those for abrasive products, on a typical US pattern of production in 1952.

b. No unweighted average is shown for abrasive products, because the entire sample has been selected according to a representative pattern of production for a leading US producer.

* The estimates and conclusions contained in this research aid represent the best judgment of ORR as of 15 July 1956.

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These ratios are valid only to the extent that the aggregate of commodities selected for each class can be considered representative of the class as a whole and only within the limits of comparability between Soviet and US products and prices.

As an example of the wide range within which ruble-dollar ratios may fluctuate in a given year, the average ratio for prices of machine tools was 6.96 rubles per US dollar at the beginning of 1950 and 3.82 rubles per US dollar at the end of that year.

I. Problems in Formulating Representative Ruble-Dollar Ratios.

A. Selection of Representative Samples.

The classes of commodities selected for this study were largely dictated by availability of comparable Soviet and US data.

There are obstacles to the selection of products which are simultaneously representative of two countries. For example, if a Soviet machine tool is selected as being representative of the Soviet machine tool industry, a US counterpart must be selected for comparison. Because of differences in the structure of the economies of the two countries, however, the US machine tool may not necessarily be representative of the US machine tool industry. In 1950 the US machine tool industry was building many more special-purpose machine tools than was the USSR, which was emphasizing mass production of general-purpose machine tools. Because the USSR did not produce so many types of machine tools as did the US in 1950, the selection of US models was restricted, for reasons of comparability, to those types produced in the USSR.

B. Weighting of Samples.

Because no Soviet weights were available, only US value weights were applied in weighting the samples. Different weighted averages would undoubtedly result if Soviet weights were to be used. The use of US weights, however, does not appear to have introduced any significant upward bias in the weighted average ratios as compared with the

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unweighted average ratios. The use of US weights for the prices of machine tools makes no appreciable difference between the unweighted and weighted average ratios (4.41 to 1 and 4.50 to 1, respectively). The unweighted average ratios are slightly higher than the weighted average ratios for metalforming machinery (7.45 to 1 and 6.82 to 1) and textile machinery (8.35 to 1 and 7.84 to 1).

C. Comparability of Soviet and US Products.

A factor which may affect to some degree the validity of ruble-dollar ratios for the prices of individual commodities, and consequently for aggregates, is the difficulty of ensuring Soviet and US products which are comparable in all respects. Although specifications, photographs, and descriptions have been used to help establish functional comparability of products, it has not been possible to compare the respective quality of materials and workmanship.

D. Comparability of Soviet and US Prices.

The accuracy of ruble-dollar ratios may be affected to some degree by differences in the price structure and pricing mechanisms of Soviet and US industry. It is axiomatic that in the USSR the prices of capital goods are low in relation to the prices of consumer goods.* In the US, this relationship does not necessarily hold true.

An analysis of the prices of abrasive products reveals an apparent difference in the structure of the abrasive industries of the USSR and the US. This analysis indicates that in the US, vitrified bonded grinding wheels are priced relatively lower, whereas in the USSR resinoid bonded grinding wheels are priced relatively lower.** Depending on the weighting system used, such differences in industrial technology introduce a bias when formulating ruble-dollar ratios.

In the USSR, wholesale prices of machinery are set by the government and remain in effect until changed by the government. Thus the same price may remain in effect for a number of years, regardless of changes in costs of production. In the US, prices are determined largely by market conditions and are shifting constantly. The Soviet government

* For additional remarks on Soviet pricing policy for capital goods, see Appendix B.

** See Appendix A, Table 7.

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revised the schedule of prices of capital goods sharply downward in 1950 -- in the case of machine tools, by as much as 35 to 40 percent. In the US, on the other hand, the prices of machine tools spiraled upward in the last half of 1950. As shown in Table 2,* the unweighted average ratio between prices of machine tools in the USSR and those in the US in 1950 ranged from 6.96 rubles per US dollar to 3.82 rubles per US dollar, depending on the period of 1950 selected.

In the USSR, new wholesale prices went into effect on 1 January 1950 for abrasive products, textile machinery, and metalforming machinery. The new prices of abrasive products and textile machinery are believed to have remained in effect throughout the year. The prices of metalforming machinery, however, after having been greatly reduced at the beginning of the year, were cut an additional 7 percent as of 1 July 1950. It is believed that the wholesale prices of machine tools established in 1949 remained in effect until 1 July 1950, when they too were drastically reduced.

In the US the prices of abrasive products increased about 10 percent in the second quarter of 1950, whereas the major increases in the prices of machine tools and metalforming machinery did not occur until the latter half of the year. Because of fluctuations in US prices in 1950 as a result of the Korean War, the selection of a period when prices could be considered most nearly normal for purposes of comparison varied according to the commodity.

There are still other factors which affect the comparability of wholesale prices. In the US, depending on the industry and producer concerned, prices quoted may or may not include such items as shipment, installation, discounts, electrical equipment, and accessories. The Soviet lists of wholesale prices used in this study specified that prices were free on board (f.o.b.) at the station of shipment and, except for abrasive products, included the cost of packing. Little is known, however, of such factors as possible discount practices in the USSR. For these reasons it is not possible to say that Soviet and US wholesale prices always include the same items, nor is it usually possible to adjust for differences.

* Table 2 follows on p. 5.

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Table 2

Changes in Ruble-Dollar Ratios for Prices of Soviet and US Machine Tools in 1950 a/

Item	Model	Soviet			Model	US			Ruble-Dollar Ratio			
		Price (Rubles)				Price (US \$)			1 Jan 1 Jul 31 Dec			
		1 Jan	1 Jul	31 Dec		1 Jan	1 Jul	31 Dec	1 Jan	1 Jul	31 Dec	
Boring machines												
Boring machine, horizontal	262G	188,900	119,380	119,380	Cincinnati Gilbert, 3 1/2 in b/	12,636	19,157	13,184	15,222	9.86:1	6.00:1	5.19:1
					Lucas, 42830, 4 in	25,639	26,638	26,638	30,755	7.19:1	4.23:1	3.67:1
Boring machine, horizontal	262D	184,400	112,800	112,800	Lucas, 42830, 4 in	25,639			30,157			
Drilling machines												
Drilling machine, radial	255	48,000	31,866	31,866	Cincinnati Gilbert, 3 ft g/ x 11 in	7,217		7,500	8,660	6.65:1	4.25:1	3.68:1
Gear cutting and finishing machines												
Gear hobbing machine	5326	90,100	65,800	65,800	Gould and Eberhardt, 36A, 36 in x 15 in	15,614		16,228	18,736	5.77:1	4.05:1	3.51:1
Gear hobbing machine, universal	532	27,600	18,800	18,800	Gould and Eberhardt, 24A, 24 in x 15 in	12,354		12,840	14,825	2.23:1	1.46:1	1.27:1
Gear shaper	514	38,800	27,354	27,354	Fellows, 615A	10,051		10,447	12,062	3.86:1	2.62:1	2.27:1
Grinding machines												
Grinding machines, plain cylindrical	3151	35,600	23,124	23,124	Landis, 6 in x 30 in	9,614		9,992	11,536	3.70:1	2.31:1	2.00:1
Grinding machines, vertical spindle	3756	68,500	51,418	51,418	Blanchard, 30 in	7,167		7,449	8,600	9.56:1	6.90:1	5.98:1
Lathes												
Lathe, 6-spindle chucking	1261P	177,300	108,852	108,852	New Britain, 65, 5-5/8 in	18,658		19,393	22,390	9.50:1	5.61:1	4.86:1
Lathe, 6-spindle vertical	1A283	215,800	126,712	126,712	Bullard, 12 in	32,183		33,450	36,620	6.70:1	3.79:1	3.28:1
Other machine tools												
Broaching machine, hydraulic horizontal	7530	74,400	45,684	45,684	La Pointe, HPSO	8,606		8,945	10,327	8.65:1	5.11:1	4.42:1
Threader, bolt	5A07	19,200	13,536	13,536	Lanumco, 1 1/2 in	2,364		2,457	2,837	8.12:1	5.51:1	4.77:1
Unweighted average ratio: Unadjusted										6.82:1	4.32:1	3.74:1
Adjusted										6.96:1	4.41:1	3.82:1

a. Because 10 of the 22 sample Soviet machine tools included in the Soviet price list of 1 July 1950 were not included in the price list of 1949, this table is limited to the 12 machine tools for which prices were available as of 1 January 1950. Unweighted average ratios were adjusted accordingly to the ratio for 1 July, using 4.41 to 1 as the base (see Table 3, p. 7, below).

b. Inches.

c. Feet.

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II. Analysis of Price Ratios.

A. Machine Tools.

As shown in Table 3,* a comparison of the prices of 22 Soviet machine tools with the adjusted prices of 22 comparable US models in mid-1950 results in an average unweighted ratio of 4.41 rubles per US dollar. The median of the ratios is 4.14 rubles per US dollar. Within the sample, individual ratios range from a high of 9.35 rubles per US dollar for a horizontal spindle grinding machine to a low of 1.46 rubles per US dollar for a universal gear hobbing machine.

If the machine tools are grouped by type and if each of the 7 types is weighted according to the value of US production in 1947, 1** an average weighted ratio of 4.50 rubles per US dollar is obtained. In view of the lack of information on the pattern of Soviet production of machine tools and because of the slight difference between the weighted and unweighted ratio, neither ratio is necessarily considered more valid than the other.

Table 3 indicates that the following items are priced relatively low and may even be produced at a comparative advantage in the USSR: gear cutting machines, with an arithmetic average ratio of 2.71 to 1; lathes, with an arithmetic average ratio of 3.65 to 1; and milling machines, with an arithmetic average ratio of 2.69 to 1.

B. Metallforming Machinery.

As shown in Table 4,** a comparison of the prices of 8 Soviet metallforming machines with those of 8 comparable US machines in mid-1950 results in an unweighted average ratio of 7.45 rubles per US dollar. The median of the ratios is 6.11 rubles per US dollar. Individual ratios in the sample range from a high of 16.94 rubles per US dollar for a rotary swager to a low of 3.35 rubles per US dollar for a pneumatic forging hammer.

If weights based on the value of US production of metallforming machinery in 1947 2/ are applied to the 5 categories of machinery shown in Table 4, a weighted average ratio of 6.82 is obtained. Although****

* Table 3 follows on p. 7.

** For serially numbered source references, see Appendix C.

*** Table 4 follows on p. 9.

**** Continued on p. 10.

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Table 3
Ruble-Dollar Ratios for Prices of Soviet and US Machine Tools on 1 July 1950

Item	Soviet		US		Unweighted Ratio a/*	Weight b/ (Percent)	Weighted Ratio c/
	Model	Price (Roubles)	Model	Price (US \$)			
Boring machines					5.66:1	7	39.62:7
Boring machine, horizontal	2623, 85 mm d/	119,380	Cincinnati Gilbert, 3½ in d/	13,184	6.00:1 4.23:1 6.74:1 4.25:1		
Boring machine, horizontal	262D, 110 mm	112,800	Lucas, 42B30, 4 in	26,638			
Boring machine, horizontal	265V, 150 mm	756,700	Lucas, 42B30, 4 in	26,638			
			Giddings and Lewis, 560P, 6 in	112,318			
Drilling machines					4.25:1	9	38.25:9
Drilling machine, radial	255	31,866	Cincinnati Gilbert, 3 ft 9/ x 11 in	7,500	4.25:1	5	13.55:5
Gear cutting and finishing machines					4.05:1		
Gear hobbing machine	5326	65,800	Gould and Eberhardt, 36H, 36 in x 15 in	16,228	4.05:1		
Gear hobbing machine, universal	532	18,800	Gould and Eberhardt, 24H, 24 in x 15 in	12,840	1.46:1		
Gear shaper	514	27,354	Fellows, 615A	10,447	2.62:1		
Grinding machines					5.58:1	15	83.70:15
Grinding machine, centerless	3180	28,200	Cincinnati, OM, 2	7,472	3.77:1		
Grinding machine, plain cylindrical	3151, 150 mm x 750 mm	23,124	Landis, 6 in x 30 in	9,992	2.31:1		
Grinding machine, horizontal spindle	3724, 2,000 mm x 400 mm	142,974	Thompson, 23-C, 16 in x 96 in	15,299	9.35:1		
Grinding machine, vertical spindle	3756, 750 mm	51,418	Blanchard, 30 in	7,449	6.90:1		

* Footnotes for Table 3 follow on p. 8.

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Table 3
Ruble-Dollar Ratios for Prices of Soviet and US Machine Tools on 1 July 1950
(Continued)

Item	Soviet		US		Unweighted Ratio $\frac{a}{b}$	Weight b/ (Percent)	Weighted Ratio $\frac{a}{b}$
	Model	Price (Roubles)	Model	Price (US \$)			
Lathes					3.65:1	25	91.25:25
Lathe, engine	1A62	13,160	Reed-Prentice, AA, 16 in x 30 in	5,165	2.55:1		
Lathe, 6-spindle chucking	1261P, 130 mm	108,852	New Britain, 65, 5-5/8 in	19,393	5.61:1		
Lathe, 6-spindle vertical	1A283, 300 mm	126,712	Bullard, 12 in	33,450	3.79:1		
Lathe, 6-spindle vertical	1284, 400 mm	140,248	Bullard, 16 in	38,945	3.60:1		
Lathe, turret	1K36, 65 mm	28,200	Bardons and Oliver, 21A, 2 1/2 in	10,375	2.72:1		
Milling machines					2.69:1	10	26.90:10
Milling machine, plain horizontal	6M82G, 1,250 mm x 300 mm	28,200	Cincinnati, 2, high-speed dial	10,126	2.78:1		
Milling machine, universal horizontal	6M82, 1,250 mm x 300 mm	30,080	Cincinnati, 2, high-speed dial	11,562	2.60:1		
Other machine tools					5.41:1	29	156.89:29
Broaching machine, hydraulic horizontal	7530, 30 MT f/7231A, 900 mm x 3,000 mm	45,684	La Pointe, HP50, 25 ST f/	8,945	5.11:1		
Planer	7A36, 700 mm 5A07	192,700 31,576 13,536	Gray, 36 in x 120 in Rockford, 28 in Landmaco, 1 1/2 in	30,708 6,665 2,457	6.28:1 4.75:1 5.51:1		
Shaper, hydraulic					4.41:1		4.50:1
Threader, bolt							
Average ratio							

a. Ruble-dollar ratios for each group of items are arithmetic averages of the ratios of the individual items in the group.
b. Based on US production in 1947.
c. Ruble-dollar ratios for each group of items (column 6) multiplied by the corresponding weight (column 7).
d. One inch (in) equals 25.40 millimeters (mm).
e. Feet.
f. Soviet tonnages are given in metric tons (MT) and US tonnages, in short tons (ST). One MT equals 1.1 ST.

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Table 4

Ruble-Dollar Ratios for Prices of Soviet and US Metalforming Machinery on 1 July 1950

Item	Soviet		US		Unweighted Ratio a/ Price (US \$)	Weight b/ (Percent)	Weighted Ratio c/ Price (US \$)
	Model	Price (Rubles)	Model	Price (US \$)			
Mechanical presses							
Press, mechanical	K231, 10 MT d/	3,860	Zeh and Hahnemann, 9 ST d/	718	5.87:1	75	440.25:75
Press, mechanical	K232, 15 MT	6,045	Zeh and Hahnemann, 16 ST	962	5.38:1		
Press, mechanical	K30, 30 MT	11,467	E.W. Blisse, 32 ST	1,927	6.28:1		
					5.95:1		
Pipe and structural bending machines							
					10.94:1	2	21.88:2
Iron worker	NG33	81,747	Buffalo, no 2½	7,471	10.94:1		
Power shearing machines							
Shears, plate	N461, 1,640 kg e/	15,345	Peck, Stov, and Wilcox, 3,900 lbs e/	2,103	7.30:1	12	87.60:12
Forging hammers							
					7.30:1		
Forging hammer, pneumatic	N412, 150 kg	17,484	Chambersburg, 300 lbs	5,218	3.41:1	4	13.64:4
Forging hammer, pneumatic	N415, 400 kg	39,860	Chambersburg, 750 lbs	11,483	3.35:1		
					3.47:1		
Other forging machines							
					16.94:1	7	118.58:7
Rotary swager	V202, 7.3 mm f/ tube diameter	14,229	Frna, 3/8 in f/ tube diameter	840	16.94:1		
Average ratio					7.45:1		6.82:1

a. Ruble-dollar ratios for each group of items are arithmetic averages of the ratios of the individual items in the group.
 b. Based on US production in 1947.

c. Ruble-dollar ratios for each group of items (column 6) multiplied by the corresponding weight (column 7).
 d. Soviet tonnages are given in metric tons (MT) and US tonnages, in short tons (ST). One MT equals 1.1 ST.

e. One kilogram (kg) equals 2.2 pounds (lb).
 f. One inch (in) equals 25.40 millimeters (mm).

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no complete figures are available on production of metalforming machinery in the USSR, forging hammers almost certainly comprise a larger portion of the total than in the US, possibly accounting for as much as 20 percent. Consequently, the weighted average ratio, although lower than the unweighted average, is still probably biased upward. Although perhaps not so great as in the US, the percentage of mechanical presses in Soviet production of metalforming machinery is very high. Hence the large weight given mechanical presses (75 percent), with an average ratio of 5.87 to 1, may be rightly considered the major factor in the weighted average ratio for metalforming machinery.

C. Textile Machinery.

As shown in Table 5,* a comparison of the prices of 16 Soviet textile machines with the adjusted prices for 16 comparable US textile machines in January 1950 results in an average unweighted ratio of 8.35 rubles per US dollar. The median of the ratios is 7.11 rubles per US dollar. Individual ratios within the sample range from a high of 17.90 rubles per US dollar for a cotton dyeing machine to a low of 2.15 rubles per US dollar for a drawing frame.

If weights based on the value of US production of textile machinery in 1947 ^{3/} are applied to the 10 categories of machinery shown in Table 5, an average of 7.84 rubles per US dollar is obtained. In view of the probable similarity between the pattern of production of textile machinery in the USSR and the US, it is believed that the weighted ratio provides a better index than does the unweighted ratio.

The ratios for the prices of textile machinery show a relatively wide dispersion. The highest ratios appear in the category of finishing machines (the cotton dyeing machine and the two-roll finishing machine), indicating that these types of machines are priced relatively higher in the USSR than in the US. Next highest is the category of yarn-preparing machines (the high-speed warping machine and the slashing cylindrical machine). With the exception of the very low ratio for the drawing frame (2.15 to 1), the ratios for the remaining textile machines all exceed the fixed exchange rate of 4 rubles per US dollar, ranging between 5.03 to 1 and 8.79 to 1. Thus the ratios for prices of such standard types of textile machinery as spinning frames (5.03 to 1),

* Table 5 follows on p. 11.

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Table 5

Ruble-Dollar Ratios for Prices of Soviet and US Textile Machinery in January 1950

Item	Soviet		US		Unweighted Ratio b/	Weight c/ (Percent)	Weighted Ratio d/
	Model	Price (Rubles)	Price (US \$) e/ *				
Cleaning and opening machines					7.54:1	5	37.70:5
One-process picker	TO-16	80,000	10,716		7.46:1		
Vertical opener	VRR-1	16,000	1,982		8.07:1		
Blending feeder	PS-1	10,300	1,455		7.08:1		
Carding machines					5.66:1	10	56.60:10
Carding machine	Ch-305	20,000	3,532		5.66:1		
Drawing and roving frames					5.01:1	6	30.06:6
Drawing frame	L-305 or L-254	15,200	7,068		2.15:1		
Roving frame	RTP-192	48,000	8,322		5.77:1		
Sliver lap winder	LS-235	20,000	2,805		7.13:1		
Spinning frames					5.03:1	10	50.30:10
Spinning frame for cotton yarn	P-66 or PU-66	46,000	9,140		5.03:1		
Twisting frames					6.88:1	6	41.28:6
Dry-twist twister	K-83	45,500	6,613		6.88:1		
Winding machines					6.64:1	9	59.76:9
Winding frame	M-150	42,500	6,396		6.64:1		
Other yarn-preparing machines					12.09:1	2	24.18:2
High-speed warping machine	SV-140	100,000	6,330		15.80:1		
Slashing cylindrical machine	ShB-140	110,000	13,120		8.38:1		

* Footnotes for Table 5 follow on p. 12.

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Table 5
Ruble-Dollar Ratios for Prices of Soviet and US Textile Machinery in January 1950
(continued)

Item	Soviet		US		Unweighted Ratio b/	Weight c/ (Percent)	Weighted Ratio d/
	Model	Price (Rubles)	Price (US \$) e/				
Power looms					8.79:1	20	175.80:20
Automatic weaving loom	ATK-100	6,750	768		8.79:1		
Hosiery knitting machines					6.14:1	21	128.94:21
Automatic machine for production of hosiery	KAS-22	16,630	2,710		6.14:1		
Bleaching, dyeing, and finishing machines					16.28:1	11	179.08:11
Cotton dyeing machine	KhK-110	293,500	16,400		17.90:1		
Two-roll finishing machine	PD-110	18,000	1,288		14.66:1		
Average ratio					8.35:1		7.84:1

a. Based on prices of comparable US models.
b. Ruble-dollar ratios for each group of items are arithmetic averages of the ratios of the individual items in the group.
c. Based on US production in 1947.
d. Ruble-dollar ratios for each group of items (column 6) multiplied by the corresponding weight (column 7).

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looms (8.79 to 1), and hosiery machines (6.14 to 1), which account for 51 percent of the machines sampled according to the US pattern, can be considered fairly typical of the price differential between Soviet and US textile machinery.

Although the use of textile machines mainly to produce consumer goods may have little significance in terms of US prices, the general policy in the USSR of pricing such machinery higher than machinery used for production of capital goods may explain to some degree the relatively higher ruble-dollar ratio for this class of machinery.

D. Abrasive Products.

As shown in Table 6,* a comparison of average prices of 85 Soviet and 85 comparable US grinding wheels in 1950, weighted according to a typical US pattern of production, ⁴/ results in an average ratio of 2.52 rubles per US dollar. The median of the ratios is 2.40 rubles per US dollar. Individual ratios range from a high of 6.38 rubles per US dollar for an 18-inch wheel (vitrified bonded, green silicon carbide grain) to a low of 1.26 rubles per US dollar for a 6-inch wheel (resinoid bonded, aluminum oxide grain).

Of the 85 ratios, 68 percent fall within plus or minus 0.60 of the arithmetic average of 2.52, or between 1.98 and 3.18. This range approximates one standard deviation. The fact that there is a strong central tendency in all 5 categories of the grinding wheels shown in Table 6 points up the validity of the 2.52 to 1 ratio for the entire assortment. In the first category (wheels with a diameter of 4 inches or smaller), 55 percent of the ratios fall between 1.98 and 3.18. In the second category (wheels with a diameter of more than 4 inches and up to 10 inches), 76 percent of the ratios fall within this range. Sixty-six percent of the ratios in the third category (wheels with a diameter of more than 10 inches and up to 18 inches), and 64 percent of the ratios in the fourth category (wheels with a diameter of more than 18 inches and up to 28 inches) fall within this range. All of the ratios in the fifth category (wheels with a diameter of more than 28 inches) fall within this range.

In general, for the prices of wheels with the smaller arbor holes (those for which no hole size is specified in the price lists), the ruble-dollar ratio tends to rise directly as the diameter of the grinding wheel

* Table 6 follows on p. 15.

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increases. The ratios tend to level off among wheels of the largest diameters and to decline where the diameter remains constant and the size of the arbor hole increases. The leveling off of ratios suggests that the USSR may give some preferential treatment in pricing to the large grinding wheels required in heavy industry.

The low average ratio for the prices of abrasive products may be explained by any one of a number of factors or by a combination of factors. The USSR may actually have a comparative advantage in production of these products, the Soviet government may heavily subsidize the abrasive products industry, or the prices of US abrasive products may be artificially maintained at a high level by market imperfections.

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C-O-N-F-I-D-E-N-T-I-A-L

Table 6

Ruble-Dollar Ratios for Prices of Soviet and US Abrasive Products in 1950 a/*

Type of Grinding Wheel	Soviet			Price (Rubles)	US			Price (US \$)	Ruble-Dollar Ratio
	Diameter (Millimeters)	Thickness (Inches)	Hole (Inches)						
Diameter 4 inches and less									
Straight wheel, coarse grit									
Vitrified bonded									
Aluminum oxide	50 c/	25		0.52	2 c/	1		0.28	1.86:1
White aluminum oxide	100	25		2.00	4	1		0.94	2.13:1
Silicon carbide	50	25		0.66	2	1		0.33	2.00:1
Green silicon carbide	100	25		2.40	4	1		1.10	2.18:1
Resinoid bonded	100	25		2.75	4	1		1.09	2.52:1
Aluminum oxide	100	25		3.65	4	1		1.14	3.20:1
Silicon carbide									
Rubber bonded									
Aluminum oxide	100	25		1.80	4	1		1.28	1.41:1
Average ratio	100	25		2.45	4	1		1.37	1.79:1
Aluminum oxide									
Average ratio	100	25		3.15	4	1		1.50	2.10:1
Average ratio									2.13:1

* Footnotes for Table 6 follow on p. 21.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

Table 6
Ruble-Dollar Ratios for Prices of Soviet and US Abrasive Products in 1950
(Continued)

Type of Grinding Wheel	Soviet			US		
	Diameter	Thickness	Hole	Diameter	Thickness	Hole
	(Millimeters)			(Inches)		
			b/			b/
Diameter more than 4 inches and up to 10 inches						
Straight wheel, coarse grit						
Vitrified bonded						
Aluminum oxide	125	25		5	1	1.97:1
	150	25		6	1	2.01:1
	175	25		7	1	2.18:1
	200	25		8	1	2.22:1
	250	25		10	1	2.50
	250	25		10	2	3.85
	250	50		10	2	6.75
	125	25		5	1	1.61
White aluminum oxide	125	50		5	2	2.27:1
	150	25		6	1	2.60
	175	25		7	1	2.40:1
	200	25		8	1	2.56:1
	250	25		10	1	2.38
	250	25		10	2	2.68:1
	125	25		5	1	2.91
	150	25		6	1	4.49
	175	25		7	1	4.49
	200	25		8	1	2.36
Silicon carbide	175	25		7	1	2.92:1
	200	25		8	1	2.88
	250	25		10	1	3.06:1
	250	25		10	2	4.45
Green silicon carbide	175	25		7	1	2.88:1
	200	25		8	1	2.47
	250	25		10	1	4.03:1
	250	25		10	2	4.24:1
	250	25		10	1	4.65

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C-O-N-F-I-D-E-N-T-I-A-L

Table 6
Ruble-Dollar Ratios for Prices of Soviet and US Abrasive Products in 1950
(Continued)

Type of Grinding Wheel	Soviet			US		
	Diameter (Millimeters)	Thickness (Hole)	Price (Rubles)	Diameter (Inches)	Thickness (Hole)	Price (US \$) Ruble-Dollar Ratio
Diameter more than 4 inches and up to 10 inches (Continued)						
Straight wheel, coarse grit						
Resinoid bonded						
Aluminum oxide	150	25	3.05	6	1	2.43
	200	25	5.20	8	1	3.55
	250	25	9.70	10	1	5.21
Silicon carbide	150	25	5.10	6	1	2.59
	200	25	7.75	8	1	3.79
	250	25	11.80	10	1	5.55
Rubber bonded						
Aluminum oxide	125	25	4.40	5	1	2.02
Average ratio						2.49:1

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C-O-N-F-I-D-E-N-T-I-A-L

Table 6

Ruble-Dollar Ratios for Prices of Soviet and US Abrasive Products in 1950
(Continued)

Type of Grinding Wheel	Soviet				US			
	Diameter (Millimeters)	Thickness (Millimeters)	Hole (Inches)	Price (Rubles)	Diameter (Inches)	Thickness (Inches)	Hole (Inches)	Price (US \$)
Diameter more than 10 inches and up to 18 inches								
• Straight wheel, coarse grit								
• Vitrified bonded								
Aluminum oxide	300	25	127	11.10	12	1		2.11:1
	350	25	127	15.70	14	1		2.23:1
	400	50	203	31.30	16	2	8	15.09
	450	25	203	26.70	18	1	8	11.00
	450	50	203	45.60	18	2	8	19.18
White aluminum oxide	300	25	127	15.30	12	1		2.50:1
	350	25	127	22.00	14	1		6.13
	400	50	203	44.30	16	2	8	8.20
	450	25	127	41.80	18	1		17.60
	450	50	203	63.70	18	2	8	2.52:1
Silicon carbide	300	25	127	17.30	12	1		13.43
	450	50	203	70.60	18	2	8	22.38
Green silicon carbide	300	25	127	24.90	12	1		6.06
	450	50	203	148.00	18	2	8	22.15
Resinoid bonded								
Aluminum oxide	300	25	127	12.60	12	1		6.35
	400	50	203	30.10	16	2	8	23.18
	450	50	203	44.80	18	2	8	6.84
Silicon carbide	300	25	127	15.20 $\frac{a}{b}$	12	1		1.84:1
	400	50	127	55.30	16	2		19.00
Rubber bonded								
Aluminum oxide	300	25	203	16.10	12	1		1.58:1
Average ratio	400	25	203	25.60	16	1	8	25.20
								7.28
								22.67
								1.89:1
								2.12:1
								2.62:1

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C-O-N-F-I-D-E-N-T-I-A-L

Table 6
Ruble-Dollar Ratios for Prices of Soviet and US Abrasive Products in 1950
(continued)

Type of Grinding Wheel	Soviet			US			Ruble-Dollar Ratio
	Diameter (Millimeters)	Thickness (Hole)	Price (Rubles)	Diameter (Inches)	Thickness (Hole)	Price (US \$)	
Diameter more than 18 inches and up to 28 inches							
Straight wheel, coarse grit							
Vitrified bonded							
Aluminum oxide	500	25	203	20	1	13.63	2.45:1
	500	25	305	20	1	12.52	2.33:1
	500	50	203	20	2	23.74	2.49:1
	500	50	305	20	2	12.82	2.16:1
	600	25	305	24	1	22.55	2.00:1
	600	50	305	24	2	32.89	2.36:1
White aluminum oxide	500	50	203	20	2	27.69	2.96:1
	500	50	305	20	2	25.45	2.56:1
	600	50	305	24	2	38.36	2.84:1
Silicon carbide	500	50	305	20	2	27.40	3.39:1
	500	75	305	20	2	25.19	2.92:1
	500	50	203	20	3	35.92	2.81:1
Green silicon carbide	500	50	305	20	2	28.68	4.71:1
	500	50	305	20	2	26.36	4.02:1
Resinoid bonded	500	75	305	20	3	37.56	3.99:1
Aluminum oxide	500	50	203	20	2	31.29	1.85:1
	500	50	305	20	2	27.03	1.72:1
	600	50	305	24	2	41.26	1.88:1
Silicon carbide	500	50	203	20	2	33.36	2.58:1
	500	50	305	20	2	28.80	2.33:1
	600	50	305	24	2	43.97	2.50:1

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C-O-N-F-I-D-E-N-T-I-A-L

Table 6
Ruble-Dollar Ratios for Prices of Soviet and US Abrasive Products in 1950
(Continued)

Type of Grinding Wheel	Soviet			US		
	Diameter (Millimeters)	Thickness (Hole)	Price (Rubles)	Diameter (Inches)	Thickness (Hole)	Price (US \$) Ruble-Dollar Ratio
Diameter more than 18 inches and up to 28 inches (Continued)						
Straight wheel, coarse grit						
Rubber bonded	500	50	305	20	2	3.40:1
Aluminum oxide						2.74:1
Average ratio						

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C-O-N-F-I-D-E-N-T-I-A-L

Table 6

Ruble-Dollar Ratios for Prices of Soviet and US Abrasive Products in 1950
(Continued)

Type of Grinding Wheel	Soviet			US			Price (US \$)	Ruble-Dollar Ratio
	Diameter (Millimeters)	Thickness (Hole)	Price (Rubles)	Diameter (Inches)	Thickness (Hole)	Price (US \$)		
Diameter more than 28 inches								
Straight wheel, coarse grit								
Vitrified bonded								
Aluminum oxide	750	50	305	30	2	56.21	2.51:1	
	750	75	305	30	3	77.86	2.54:1	
	900	52	305	36	2	85.99	3.85:1	
White aluminum oxide	750	78	305	36	3	117.07	3.00:1	
	750	50	305	30	2	55.27	3.00:1	
	750	75	305	30	3	90.85	3.05:1	
Resinoid bonded								
Aluminum oxide	750	75	305	30	3	97.90	2.01:1	
	750	100	305	30	4	128.65	1.96:1	
Average ratio							2.62:1	
Average ratio for all sizes							2.52:1	

a. As represented by grinding wheels. See Appendix A.

b. The size of the arbor hole of smaller grinding wheels is not specified in price lists.

c. One inch (in) equals 25.40 millimeters (mm).

d. Interpolated.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

APPENDIX A

METHODOLOGY

1. Machine Tools.

US production of machine tools accounts for approximately 25 percent of the total value of US metalworking machinery and equipment. 5/ The machine tools selected as samples are classified according to type in Table 3* on the basis of the breakdown contained in the Census of Manufactures: 1947. 6/ The 7 categories of machine tools represented in Table 3 account for approximately 90 percent of the total value of machine tools (primary products) produced in the US in 1947.

Prices of Soviet machine tools as shown in Table 3 were taken from a wholesale price list issued by the Main Administration of Sales of the Ministry of Machine Tool Building, USSR. 7/ The prices went into effect 1 July 1950 and were f.o.b. at the station of shipment, including cost of packing. The prices in January 1950 of the machine tools listed in Table 2** were taken from a price list issued in 1949 by the Ministry of Finance, USSR, and the Central Statistical Administration under the Council of Ministers, USSR. 8/ This price list specified that the prices were f.o.b. at the station of shipment and that they included the cost of packing as well as the cost of electrical equipment and necessary attachments. Shipments made directly from the warehouse of the producer were subject to reductions in price equal to the cost of packing. So far as is known, the prices of machine tools announced in 1949 remained in effect until 1 July 1950. Prices as of 1 July 1950 were used to establish the ratios for 1950 in this study because these prices presumably reflected an attempt by the Soviet government to bring the prices of machine tools in line with the new prices of other capital goods, many of which were reduced as of 1 January 1950.

In the absence of readily available data on prices and changes in prices of US machine tools, a roundabout method had to be employed. Prices of US models of machine tools were obtained from a publication of the Office of Price Stabilization (OPS), 9/ which gave prices as of

* P. 7, above.

** P. 5, above.

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C-O-N-F-I-D-E-N-T-I-A-L

mid-December 1951. Although the Bureau of Labor Statistics (BLS), US Department of Labor, does not publish a price index for machine tools and was unable to supply any direct information, it was found that an accurate index could be constructed from other information published on metalworking machinery.

A BLS publication 10/ showed an increase of 21 percent in the prices of a special grouping of 5 of the 8 classes of the metalworking machinery subgroup, including machine tools. The problem was to establish a price index for the machine tools class alone. On the basis of the BLS base value weights, 11/ the weight of the machine tools class was established as 43 percent of the total weight of all classes included in this special grouping. It was necessary to include in the machine tool class those tools designed primarily for home workshops, which comprised 3 percent of the total weight of the special grouping. The expanded machine tool class then accounted for a total of 46 percent of the base value weight. On the basis of data published by the BLS, it was possible to establish a weight and a price index for each of the 26 commodities included in the 3 remaining classes of the special grouping. 12/ It was found that these 3 classes, which accounted for 54 percent of the weight, showed an increase in price of 15.7 percent and, consequently, that the machine tools class, which accounted for 46 percent of the weight, showed an increase in price of 27.2 percent between 1 July 1950 and 1 January 1952. Similar indexes were constructed for the period 1 January 1950 - 1 January 1952 and 31 December 1950 - 1 January 1952 for use in Table 2.* The increases in prices during these periods were 32.4 percent and 10.3 percent, respectively.

OPS base prices as of mid-December 1951 were then adjusted to 1 July 1950 on the basis of an increase in price of 27.2 percent. Prices as of 1 July 1950 for Soviet and US models of machine tools were used to derive the unweighted ruble-dollar ratios in 1950 shown in Table 3.** The unweighted ratios then were added and averaged to derive the unweighted average ratio.

Figures on the value of US production were taken from the Census of Manufactures: 1947 for each of the seven categories of machine tools shown in Table 3, and the average ratio for each category was weighted accordingly. The weighted figures then were added and averaged for the class as a whole.

* P. 5, above.

** P. 7, above.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

2. Metalfforming Machinery.

Differences in the Soviet and the US systems of classification of metalfforming machinery made necessary the selection of only those US machines which also fitted the Soviet definition. On the basis of BLS base value weights, 13/ metalworking presses and the individual metalfforming machines listed under "other metalworking machinery" account for approximately 20 percent of the total value of the US metalworking machinery and equipment subgroup. Commodities qualifying as metalfforming machinery in the Census of Manufactures: 1947, 14/ however, comprised only about 10 percent of the total value of metalworking machinery (primary products).

The metalfforming machines selected as samples are classified according to type in Table 4* on the basis of the breakdown contained in the Census of Manufactures: 1947. The 5 categories of metalfforming machinery represented in Table 4 account for approximately 72 percent of the total value of metalfforming machinery (primary products) produced in the US in 1947.

Prices of Soviet metalfforming machinery as shown in Table 3** were taken from a wholesale price list issued by the Main Administration of Sales of the Ministry of Machine Tool Building, USSR. 15/ The prices which went into effect on 1 July 1950 were f.o.b. at the station of shipment, including cost of packing. These prices represented a flat reduction of 7 percent as compared with prices on 1 January 16/ which, in turn, represented reductions of as much as 25 percent as compared with prices in 1949. 17/ Prices on 1 July 1950 were used in preference to those on 1 January because the July prices presumably reflect an attempt by the Soviet government to bring prices of metalfforming machinery more in line with the reduced prices of other capital goods.

Prices of the US metalfforming machines were taken from an OPS publication 18/ which gave base prices as of mid-December 1951. To establish a price index for metalfforming machinery between 1 July 1950 and 1 January 1952, the increase in price of each commodity was weighted according to BLS base value weights. 19/ The resulting average increase in price of 19 percent was used to adjust the price of each metalfforming machine in December 1951 to the price on 1 July 1950. The prices of Soviet and US models of metalfforming machinery were then used to derive the unweighted ruble-dollar ratios for 1950 shown in Table 4.

* P. 9, above.

** P. 7, above.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

The average ratio for each of the five categories of metalforming machines was weighted on the basis of the values of US production given in the Census of Manufactures: 1947, 20/ and a weighted average ratio was computed for all metalforming machinery.

3. Textile Machinery.

In view of the overwhelming importance of cotton in the textile industries of the USSR and the US, the machines selected for this part of the study are all machines found in the cotton textile industry. The particular machines selected to represent types of machinery used in the cotton textile industry -- cleaning and opening machines, carding machines, drawing and roving frames, spinning and twisting frames, yarn preparing machines, fabric machines, and finishing machines -- are listed in the order in which they enter into the manufacturing process. The types of textile machinery represented by the 16 sample machines accounted for 72 percent of the total value of all textile machines produced in the US in 1947. 21/

The Soviet models were selected from a price list of equipment for light industry issued by the Ministry of Machine and Instrument Building, USSR. 22/ The prices, which became effective on 1 January 1950, were f.o.b. at the point of shipment and included the cost of packing. The Soviet price list also contained specifications of the textile machines. These specifications were submitted to US producers of textile machines with a request for prices of the US models which most nearly approximated the Soviet models. One weakness in the replies was the failure of the US producers to indicate specifications of the US machines they were using for comparison.

Because US prices were for February 1953, it was necessary to readjust them to prices as of 1950. On the basis of data supplied by BLS, it was possible to set up a wholesale price index for textile machines between January 1950 and February 1953.* The prices in 1953

* BLS data were limited to 2 sets of prices for 14 textile machines, the first set being the average price in January 1949 and the second set that in mid-1951. Because the BLS wholesale price index for general machinery and equipment as a whole showed virtually no change between January 1949 and January 1950, 23/ the prices supplied for the textile machines as of January 1949 were used for base prices as of January 1950. Each item was given an equal weight, and the prices of January 1949 and mid-1951 were totaled and averaged, providing wholesale price indexes for January 1950 and July 1951. The rate of increase in this period was then projected to February 1953.

C-O-N-F-I-D-E-N-T-I-A-L

were adjusted to January 1950 on the basis of an increase of 22 percent during the period. Given comparable Soviet and US textile machines and the established prices for these machines as of January 1950, it was possible to establish the 16 unweighted ratios shown in Table 4.*

The value of US production of textile machines in 1947 was used to weight the various types of textile machinery represented in the sample.

4. Abrasive Products.

Abrasive products are not necessarily representative of a large portion of the BLS general-purpose machinery subgroup and account for only about 10 percent of the total base value of the subgroup. ^{24/} Abrasive products were selected for this study, however, because of availability of prices of both Soviet and US products. Grinding wheels, in turn, were selected to represent abrasive products for two principal reasons. In 1947, grinding wheels alone accounted for more than 40 percent of the total value of nonmetallic abrasives and 32 percent of the total value of all abrasives produced in the US. ^{25/} Thus grinding wheels accounted for the largest percentage of production of any one abrasive product. In addition, Soviet and US grinding wheels were entirely comparable in respect to shape, grit, bond, grain, and size. The only respect in which comparability could not be established was quality.

To establish an average ratio for the abrasive products class, 85 Soviet grinding wheels were matched with 85 comparable US grinding wheels, all weighted according to the pattern of production of a major US producer in 1952. In view of the structure of the abrasives products industry, this pattern was considered representative of the industry as a whole in the US. The large number of samples was dictated by the desire to include in various categories the wheels of lesser importance -- those with resinoid and rubber bond. Wheels were selected with regard to size, bond, and grain on the basis of the pattern of production of the US producer. Because no information was available as to the shape and grit of the wheels, straight wheels with coarse grit were selected throughout to facilitate comparison. No information on the Soviet pattern of production was available.

* P. 9, above.

C-O-N-F-I-D-E-N-T-I-A-L

C-O-N-F-I-D-E-N-T-I-A-L

The prices for Soviet grinding wheels in 1950 were obtained from a price list of wholesale prices for abrasive products issued by the Main Administration of Sales of the Ministry of Machine Tool Building, USSR. ^{26/} Prices became effective on 1 January 1950 and remained in effect throughout the year. The Soviet prices are factory prices and do not include the cost of packing. In the USSR, there is a reduction in price of 10 percent for abrasive products of second quality, but it is not known whether there is any discount for quantity orders.

US prices were taken from the price list, effective 20 July 1953, of a representative US producer, ^{27/} and were f.o.b. at the point of shipment. Because all prices were subject to 1 of 5 quantity discounts, ranging from 36.5 to 65 percent of the list price, the middle discount rate of the 5 quantity discounts -- 43 percent -- was taken as an average to obtain representative prices of the wheels. On the basis of BLS price indexes, ^{28/} these prices of July 1953 were adjusted to prices for grinding wheels in 1950.* The ruble-dollar ratios were derived by dividing Soviet prices by US prices.

Several factors in the methodology affect the ratios. These factors are (a) a bias arising from an apparent difference in the technologies of the Soviet and US abrasive products industries, (b) the arbitrary selection of straight wheels with coarse grit as samples, (c) the adoption of the middle discount rate to arrive at representative US prices, (d) the lack of information on the pattern of production and possible quantity discount practices in the USSR, and (e) possible error introduced by allowing grinding wheels to represent all abrasive products.

Table 7** -- which contains a comparison of the price structure of Soviet and US grinding wheels selected from the 85 samples on the basis of comparability of size, bond, and grain -- indicates at least

* Separate price indexes were available for grinding wheels, silicon carbide and resinoid bonded; grinding wheels, silicon carbide and vitrified bonded; grinding wheels, aluminum oxide and resinoid bonded; and grinding wheels, aluminum oxide and vitrified bonded. Because there was no index for rubber bonded wheels, an average of the indexes for resinoid and vitrified bonded wheels was used to compute prices for rubber bonded wheels in 1950. The average index in 1950 was used for grinding wheels because the jump in prices occurred early in the year and remained constant throughout the remainder of the year. By April-May the indexes for prices of grinding wheels were equal to or well above the average for the year.

** Table 7 follows on p. 29.

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C-O-N-F-I-D-E-N-T-I-A-L

Table 7

Comparison of Prices of Soviet and US Grinding Wheels in 1950

Specifications of Wheel			Prices According to Bond and Grain			
Diameter	Thickness	Hole a/ (Millimeters)	Type of Bond	Aluminum Oxide	White Aluminum Oxide	Silicon Carbide Green Silicon Carbide
(Rubles)						
Soviet	100 b/	25	Vitrified	2.00	2.40	
	200	25	Resinoid	1.37		2.75
			Vitrified	5.55		2.45
	250	25	Resinoid	5.20	7.80	8.80
			Vitrified	7.85		7.75
	300	25	Resinoid	9.70	11.40	12.80
			Vitrified	11.10		12.80
	500	50	Resinoid	12.60	15.30	11.80
			Vitrified	59.10		17.30
			Resinoid	57.90	82.40	15.20
						92.90
						86.00
						135.00
(Inches)						
US	4 b/	1	Vitrified	0.94	1.10	1.09
	8	1	Resinoid	1.28		1.80
			Vitrified	2.50	2.91	2.88
	10	1	Resinoid	3.55		3.79
			Vitrified	3.85	4.49	4.45
	12	1	Resinoid	5.21		5.55
			Vitrified	5.25	6.13	6.06
	20	2	Resinoid	6.84		7.28
			Vitrified	23.74	27.69	27.40
		8	Resinoid	31.29		33.36

a. The size of arbor hole of smaller grinding wheels is not specified in price lists.
 b. One inch (in) equals 25.40 millimeters (mm).

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one basic difference in the abrasive products industries of the two countries. In the US, given wheels of the same size and grain, the prices of those with vitrified bond are substantially lower than the prices of those with resinoid bond. In the USSR the reverse is true. Wheels with resinoid bond are generally priced lower than those with vitrified bond,* reflecting a basic difference in the technology of the two industries. Because a US pattern of production, comprised of almost 70 percent of wheels with vitrified bond, was used to establish an average ratio for grinding wheels, the resulting ratio probably has an upward bias. Although no pattern of production is available for the USSR, it is possible that wheels with resinoid bond occupy a dominant position there. In that event a ratio established on the basis of the Soviet pattern of production might fall somewhere between 1.50 rubles per US dollar and 2.00 rubles per US dollar because the majority of ratios for wheels with resinoid bond fall between 1.00 to 1 and 2.00 to 1.

With respect to weighting according to type of abrasive grain, the use of the US pattern of production did not necessarily introduce a significant bias. In the sample, wheels with aluminum oxide or white aluminum oxide grain account for nearly 70 percent of US production of grinding wheels. In both the USSR and the US, wheels with aluminum oxide grain are the cheapest in price.

In the US, wheels with white aluminum oxide grain or silicon carbide grain cost approximately the same, with the former tending to be slightly higher in price. In the USSR, wheels with silicon carbide grain are higher in price than those with white aluminum oxide grain. In both countries, wheels with green silicon carbide grain are the most expensive. The price differentials on the basis of grain are relatively small in the US but rather large in the USSR.

* Although there are two exceptions to this generalization in Table 7, p. 29, above -- aluminum oxide wheels with resinoid bond, 250 and 300 millimeters in diameter -- all other aluminum oxide wheels of these same diameters shown in the Soviet price list bear out the generalization. In 5 cases out of 6 involving wheels with a diameter of 250 millimeters, and in 12 cases out of 13 involving wheels with a diameter of 300 millimeters, the wheels with resinoid bond were priced lower than those with vitrified bond.

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APPENDIX B

GAPS IN INTELLIGENCE

Among the major gaps in intelligence on prices of Soviet machinery is the lack of prices in 1950 of some types of machinery, such as agricultural machinery (exclusive of tractors). Although prices in 1950 of some other types of machinery are available, it has not yet been possible to develop ruble-dollar ratios for all of these types. Additional ruble-dollar ratios for prices of other selected types of machinery would broaden the base for further study.

Information on Soviet systems of classifying machinery and of weighting different types of machinery are also lacking.

If ruble-dollar ratios for prices of machinery are to be established for other periods, later Soviet lists of wholesale prices are needed, specifically those of 1952 and 1955.

More detailed information about prices of capital goods in the USSR is needed for better evaluation of the validity of ruble-dollar ratios for prices. The Soviet position that producer goods "are not in any real sense bought and sold, are not 'commodities' whose prices are determined by market forces, and are not . . . 'subject to the law of value,' but are in the main merely transferred from one state enterprise to another in conformity with the plan" 29/ raises some question as to the meaning of Soviet prices. Although it was declared that in the USSR, "as a result of the 1949 wholesale price reform, the system of state subsidies to heavy industry was eliminated, and wholesale prices were made to conform to the net cost of goods," 30/ the new wholesale prices introduced in 1950 for metalworking machinery, for example, represented a drastic reduction from the higher prices set in 1949 and may have marked a return to the subsidization of heavy industry, despite official disavowals.

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APPENDIX C

SOURCE REFERENCES

Evaluations, following the classification entry and designated "Eval.," have the following significance:

<u>Source of Information</u>	<u>Information</u>
Doc. - Documentary	1 - Confirmed by other sources
A - Completely reliable	2 - Probably true
B - Usually reliable	3 - Possibly true
C - Fairly reliable	4 - Doubtful
D - Not usually reliable	5 - Probably false
E - Not reliable	6 - Cannot be judged
F - Cannot be judged	

"Documentary" refers to original documents of foreign governments and organizations; copies or translations of such documents by a staff officer; or information extracted from such documents by a staff officer, all of which may carry the field evaluation "Documentary."

Evaluations not otherwise designated are those appearing on the cited document; those designated "RR" are by the author of this report. No "RR" evaluation is given when the author agrees with the evaluation on the cited document.

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